

# HUMAN-ELEPHANT RELATIONSHIPS ON THE ANAMALAI HILLS

## Natural history of the Asian elephant (*Elephas maximus*)

### ELEPHANTS IN HISTORY AND CULTURE

- The Asian elephant is deeply etched in the history and mythology of Asia, being a symbol of fertility, wealth, and abundance, for over 4000 years from the days of the Harappan civilization
- The elephant-human relationship has been good in most parts of India, due to the unlimited human compassion and tolerance towards this enormous pachyderm and *vice versa*.

### CONSERVATION STATUS

- Asian elephants are an endangered species protected under Schedule I of the Indian Wildlife Protection Act of 1972
- It is to India's credit and pride that it has the largest population of Asian elephants, containing some 28,000 of an estimated 40,000 animals surviving in the wild
- The Anamalai, a hill range known for and named after its elephants, is believed to contain the second largest population within India: around 1,500 animals in an area of 5,600 km<sup>2</sup>



M. D. Madhusudan

- Due to poor digestive ability, elephants must consume large quantities of forage to obtain sufficient nutriment
- An adult elephant requires 100-150 kg of fodder and 150 litres of water everyday
- Elephants spend 15-20 hours a day feeding; if disturbed or obstructed by humans during foraging, they may seek out concentrated food stores to meet their need
- Due to lack of sweat glands, elephants frequent mud wallows and water-bodies on hot days
- Tea plantations lack shade and forage, so elephants isolated therein need forest patches or Eucalyptus areas for daytime resting, feeding, and movement

### HOME RANGE

- Elephants are intelligent animals, learning from other herd members the distribution of food and water sources



Divya & Sridhar

### ELEPHANT SOCIETY

- Close family ties are as important in elephant societies as in humans, particularly among females
- The social life of elephant males is very different from females. Adult males are mostly solitary, with no lasting bonds with other males or female-led family units
- Herds are led by a matriarch, usually the oldest female
- Such herds are mostly family units, with related females and their offspring

### HABITATS AND HABITS

- Elephants occur in habitats ranging from dry thorn to evergreen forests and grasslands
- They feed on a large diversity of plants, mostly grass, bamboo, and browse

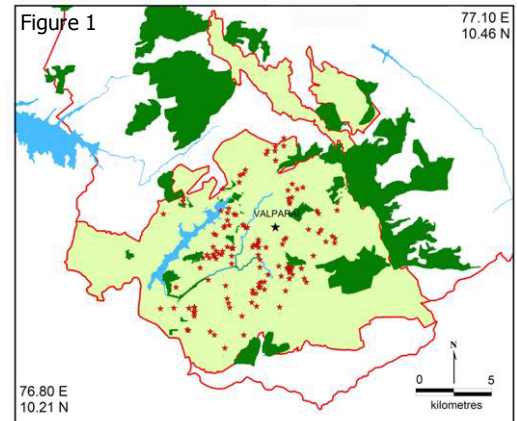


- Elephants develop an intimate knowledge of the resources available in a fixed area (called the **home range**) of their environment, which can sustain them over different seasons and many years
- A single herd or adult male Asian elephant requires a home range area between 150 and 600 sq. km (two-thirds to thrice the size of the entire plantation area on the Valparai plateau)
- Where resources are poor due to habitat degradation or alteration to agriculture, home ranges are typically even larger
- However, due to human interference and habitat loss, elephants are confined to smaller and smaller areas, leading to overcrowding and spillover problems and resulting in conflict

(Reference: Desai, A. 2001. *Nature's Masterpiece: The Elephant*, Karnataka Forest Department, Bangalore)

## HUMAN-ELEPHANT CONFLICT IN A LANDSCAPE OF PLANTATIONS AND RAINFORESTS IN THE ANAMALAI HILLS

Area of the Valparai plateau: 220 sq. km (light green)  
 Landscape mosaic: Tea plantations (c. 65% of area)  
 Major landscape features: Rainforest fragments (dark green), Eucalyptus fuel clearing, coffee, streams and swamps, human settlements, and reservoirs  
 Human population density: 600/sq. km  
 Ecological value of the region: Once a large tract of mid-elevation (900-1500 m) wet evergreen forests, it is now surrounded by protected areas on all sides and contains a large number of wide-ranging, endangered and endemic wildlife species  
 Questions: How are conflicts distributed over space and time on the Valparai plateau? What is the nature and magnitude of conflict?



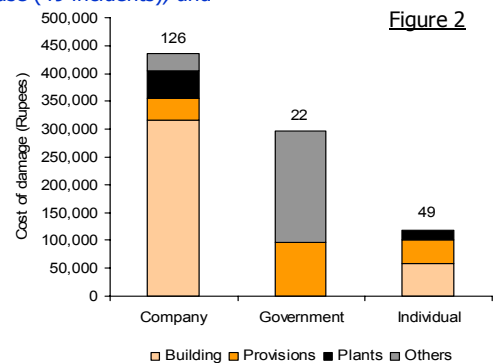
**Figure 1:** In total, 171 elephants in 11 herds ranging in size between 7 and 20, were tracked on the Valparai plateau between April 2002 and March 2003. Conflict incidents were recorded all over (red stars) but some areas were more conflict-prone. Rate of conflict incidents increased with the number of days spent by herds on the plateau. This region, used by elephants for millennia because of relatively easy terrain, food, and perennial water, currently offers little in the way of forage for elephants being dominated by tea plantations. The thousands of scattered households and density of over 600 people / sq. km often brings elephants into close proximity of people.



**Figure 2:** Conflict included major damages (154\* incidents in 1 year) to:

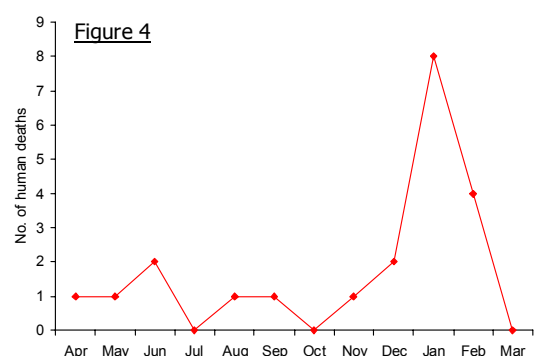
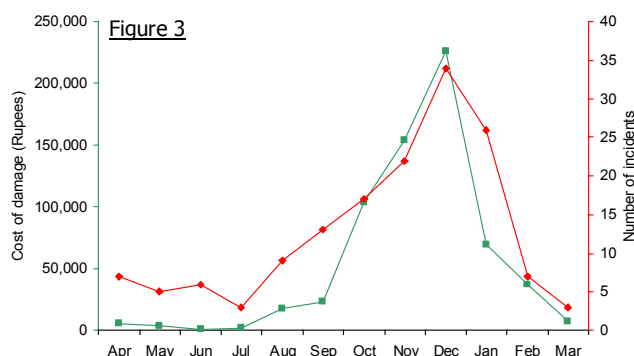
- > human life (2 persons)
  - > buildings and other property owned by private companies (like BBTC, Tata Tea, HLL, Puthuthottam Estates, etc.; 126 incidents),
  - > provisions like rice, sugar, and lentils stored for public distribution and for the free noon-meals in primary schools (22 incidents),
  - > plants such as banana and vegetables grown near housing quarters for domestic use (49 incidents), and
- [\*Some incidents included more than one kind of damage.]

- > The overall cost of damage (excluding compensation for deaths) was estimated to be between Rupees 5 and 6.5 lakhs (April 2002 to March 2003). The extent of loss ranged up to Rs. 75,000/- per incident. Forty four percent of the incidents were 'minor' damages accounting for less than Rs. 500/- per incident.
- > About 70% of the incidents occurred within tea estates, the most dominant feature of the landscape. The economic impact was therefore largest to private companies.
- > The government spent most on paying compensations to the family of the deceased.
- > Estate workers living in small colonies were the most affected in terms of anxiety and trauma (immeasurable aspects), as elephants came in close proximity to their homes to access water sources and food plants.



**Figure 3:** There was elephant movement and damage on the Valparai plateau throughout the year of study, but the number of incidents as well as magnitude of loss was highest in the months of November, December, and January.

**Figure 4:** Records of loss of human life due to elephants for the last 10 years (1994-2003) also indicates more deaths during December, January, and February. All deaths were in or close to plantation areas. There were no deaths in tribal settlements inside the forest areas.





## HUMAN-ELEPHANT CONFLICT: POTENTIAL RESOLUTION MEASURES

### ENHANCING COEXISTENCE

The presence of elephants on the Valparai plateau is a reality that cannot be wished away. The **only** long-term measure to alleviate human-elephant conflict in the plantation-dominated Valparai landscape is the implementation of pro-active steps that incorporate an understanding of the food and range requirements of wild elephants. Land-owners and companies should:

1. Set-aside and protect regularly-used *movement routes* of elephants through the plantation landscape (see map on page 4).
2. Protect from felling, conversion, grazing, fuel-wood collection, and disturbance, all surviving *forest and natural vegetation patches* within the plantations.
3. Adopt a *controlled felling regime* of *Eucalyptus* fuel-wood plantations, particularly along movement routes and streams (avoid clear-felling, and leave at least 25 m buffer from stream edge).
4. *Regenerate or restore* habitat along movement routes (e.g., along Sholayar, Nadu Ar, Sirikundra rivers etc.) with natural vegetation.
5. Implement a strict policy of "*no harassment and no obstruction*" of elephants during their daytime movements and feeding.
6. Participatory property and life insurance involving the Forest Department, the conservation community, and private companies and landowners needs to be instituted.



### DETECTION AND AVOIDANCE

Anticipating potential conflict and avoiding it would be possible if elephant herds are detected early enough and not located only **after** an incident has occurred. Simple steps to detect elephants can be taken:

1. Wildlife has no borders. Therefore there should be within- and between-company *communication* and cooperation to increase awareness of elephant presence, prevent harassment of elephants by people, and facilitate their *passage* across the Valparai plateau in the minimum time.
2. Simple, trip-wire alarm systems may be installed around labour colonies to *warn* them of the presence of elephants in their immediate vicinity at night.
3. As a matter of policy, efforts should be made to reallocate work and workers to fields without elephants, instead of chasing elephants that are trying to move through estates. *Early detection* and appropriate planning can ensure that no time, resources, or lives are lost.
4. Implement programmes to improve *awareness*, tolerance, and understanding of wild elephants and their needs for all sections of Valparai society, estate workers, managers, school children, and others.



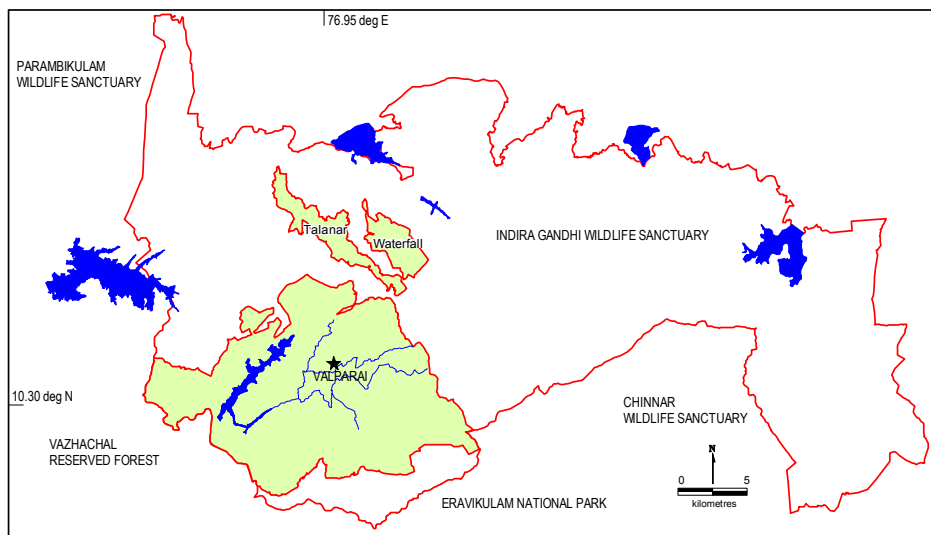
### DETERRENCE

Deterrence is the first thing that people think of in human-wildlife conflict, but should probably be used as the **last resort** to tackle critical conflict situations and as a supplement to long-term and holistic efforts.

1. In the food-scarce plantation landscape, noon-meal centres, shops, and provision stores are visited and damaged (often repeatedly) by elephant herds in search of food. Such places can be protected by sturdy, well-designed modern *power fences*. This is economically and ecologically preferable to power-fencing large areas of estate, which merely creates obstructions to movements and leaves many housing colonies and stores exposed to elephants.
2. Strong *physical barriers* (sturdy barrier-fence using railway lines) may also work around buildings, although this is yet to be tested in field.
3. *Centralized storage* of food-grains at a well-protected location, coupled with immediate distribution can decrease the likelihood of damage and reduce associated costs.
4. Storing food-grains in *underground / basement* storage rooms may also reduce the risk of damage from elephants.
5. Removing banana plants around housing colonies may only reduce elephant visitation to these areas. Human habitations close to movement routes and waterbodies are likely to be visited by elephants, irrespective of whether they grow banana and other plants or not. We suggest that all banana and other garden plants are *cultivated at some distance* (at least 30 m) away from human habitation to minimise close encounters between elephants and people.

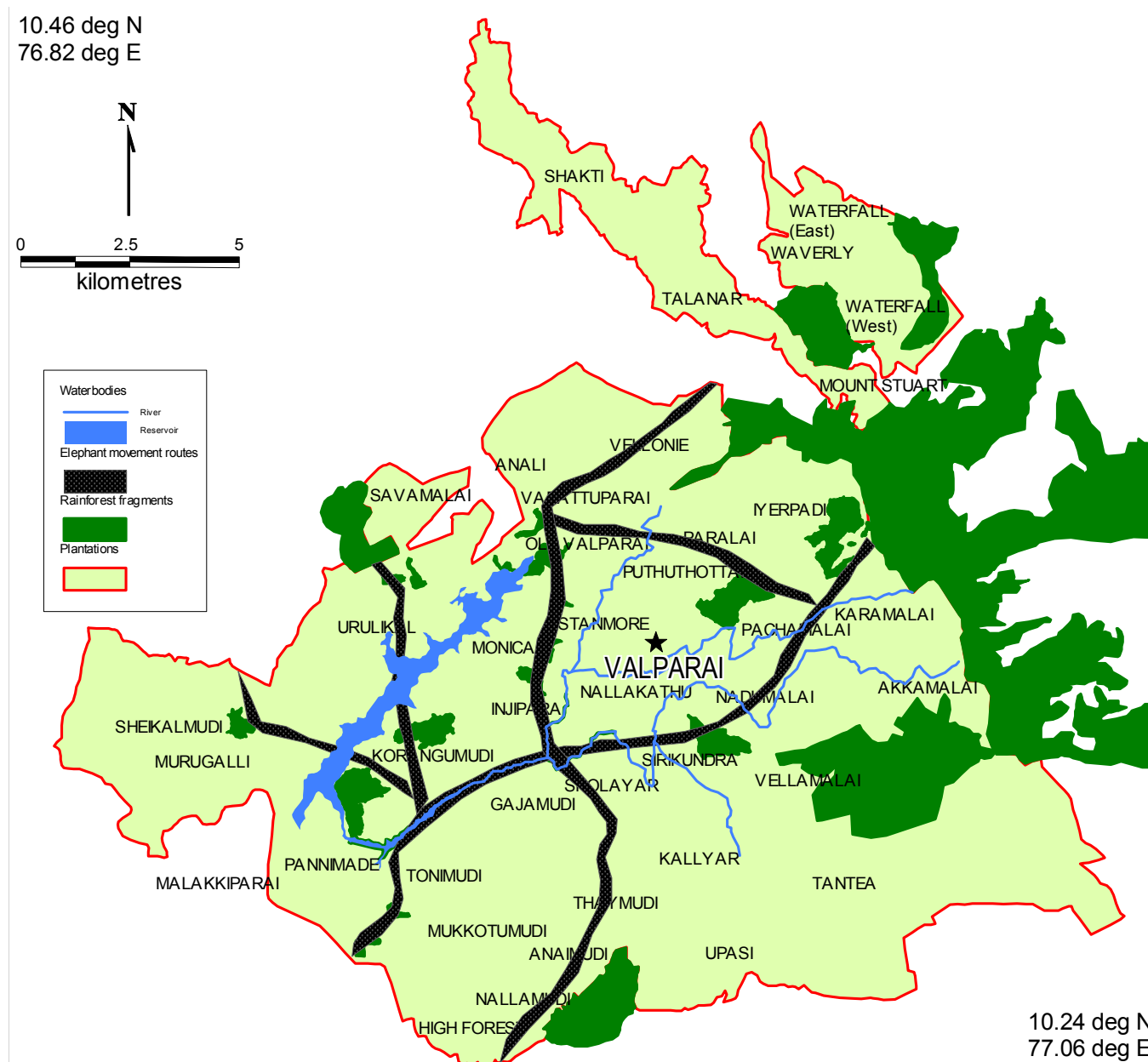
#### Acknowledgements

This project was supported by funding from the Asian elephant conservation fund of the United States Fish and Wildlife Service. We are also grateful to a small grant from The Elephant Sanctuary, Tennessee, through Dr. Christy Williams. The Tamil Nadu Forest Department provided permits for the research and we are grateful to the Chief Wildlife Warden, the Wildlife Warden of IGWLS, Mr. V. Ganesan, range officers and other staff for their support. The Anamalai Biodiversity Conservation Association and many plantation company managers and workers (too numerous to individually mention here) provided much information, help, and local support, for which we are grateful. Our colleagues at the Nature Conservation Foundation provided inspiration, encouragement, and a productive atmosphere for the execution of this work. Hari, Raghunath, and Vena helped us with field work. Silamban, Dinesh, Murthy and Satish assisted in elephant tracking and data collection. We are thankful to them all.



**Left:** The private lands of the Valparai plateau (green) is embedded within a large area of prime elephant habitat, one of the largest continuous conservation areas in the country.

**Below:** A schematic representation of elephant movement routes through the estates on the Valparai plateau in relation to rainforest fragments and major rivers.



**nature conservation foundation**  
*science for conservation*

3076/5, IV Cross, Gokulam Park  
 Mysore 570 002, INDIA

[www.ncf-india.org](http://www.ncf-india.org)